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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,654	04/02/2004	Shunpei Yamazaki	0756-7279	9416

31780 7590 02/12/2007  
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EXAMINER
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LEWIS, MONICA

ART UNIT	PAPER NUMBER
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2822

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/815,654

Applicant(s)

YAMAZAKI ET AL.

Examiner

Monica Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-84 is/are pending in the application.
- 4a) Of the above claim(s) 1-43,45-47,49-51,53-55,57-60,64,65 and 72-84 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 44,48,52,56,61-63 and 66-71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/06</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This office action is in response to the response filed November 17, 2006.

#### ***Response to Amendment***

2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

#### ***Response to Arguments***

3. Applicant's arguments with respect to claims 44, 48, 52, 56, 61-63 and 66-71 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Specification***

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

#### ***Claim Rejections - 35 USC § 112***

5. Claims 52 and 62 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification fails to disclose that the following: a) channel comprises crystalline silicon (See Claim 52); and b) a channel comprises microcrystalline silicon (See Claim 62).
6. Claim 63 recites the limitation "the laser light." There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 44, 48, 66, 70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nicholas (U.S. Patent No. 5,132,821) in view of Sato (U.S. Patent No. 5,268,777).

In regards to claim 44, Nicholas discloses the following:

- a) a pair of substrates (22 and 24) (For Example: See Figure 2);
- b) a thin film transistor formed between the pair of substrates, the thin film transistor having a channel forming region comprising silicon (For Example: See Column 6 Lines 14-24); and
- c) a layer (37) comprising resin covering the thin film transistor (For Example: See Figure 2).

In regards to claim 44, Nicholas fails to disclose the following:

- a) flexible substrates wherein the device is flexible.

However, Sato discloses flexible substrates wherein the device is flexible (For Example: See Column 7 Lines 27-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include flexible substrates as disclosed in Sato because it aids in providing a flexible panel (For Example: See Column 7 Lines 27-33).

Additionally, since Nicholas and Sato are both from the same field of endeavor, the purpose disclosed by Sato would have been recognized in the pertinent art of Nicholas.

In regards to claim 48, Nicholas discloses the following:

- a) a pair of substrates (22 and 24) (For Example: See Figure 2);
- b) a thin film transistor formed between the pair of substrates with a resinous layer (31) interposed therebetween, the thin film transistor having a channel forming region comprising silicon (For Example: See Column 6 Lines 14-24); and
- c) a layer (37) comprising resin covering the thin film transistor (For Example: See Figure 2).

In regards to claim 48, Nicholas fails to disclose the following:

- a) flexible substrates wherein the device is flexible.

However, Sato discloses flexible substrates wherein the device is flexible (For Example: See Column 7 Lines 27-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include flexible substrates as disclosed in Sato because it aids in providing a flexible panel (For Example: See Column 7 Lines 27-33).

Additionally, since Nicholas and Sato are both from the same field of endeavor, the purpose disclosed by Sato would have been recognized in the pertinent art of Nicholas.

In regards to claim 66, Nicholas fails to disclose the following:

- a) flexible substrate comprises a plastic substrate.

However, Sato discloses a plastic substrate (For Example: See Column 7 Lines 27-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include a plastic substrate as disclosed in Sato because it aids in providing a flexible panel (For Example: See Column 7 Lines 27-33).

Additionally, since Nicholas and Sato are both from the same field of endeavor, the purpose disclosed by Sato would have been recognized in the pertinent art of Nicholas.

In regards to claim 70, Nicholas discloses the following:

a) the thin film transistor comprises an inverted staggered thin film transistor (For Example: See Figure 2).

In regards to claim 71, Nicholas discloses the following:

a) the thin film transistor comprises a coplanar thin film transistor (For Example: See Figure 2).

9. Claims 52, 56, 61, 66, 70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nicholas (U.S. Patent No. 5,132,821) in view of Sato (U.S. Patent No. 5,268,777) and Yamazaki et al. (U.S. Patent No. 5,894,151).

In regards to claim 52, Nicholas discloses the following:

a) a pair of substrates (22 and 24) (For Example: See Figure 2);

b) a thin film transistor formed between the pair of substrates with a resinous layer (31) interposed therebetween, the thin film transistor having a channel (For Example: See Column 6 Lines 14-24); and

c) a layer (37) comprising resin covering the thin film transistor (For Example: See Figure 2).

In regards to claim 52, Nicholas fails to disclose the following:

a) flexible substrates wherein the device is flexible.

However, Sato discloses flexible substrates wherein the device is flexible (For Example: See Column 7 Lines 27-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include flexible substrates as disclosed in Sato because it aids in providing a flexible panel (For Example: See Column 7 Lines 27-33).

Additionally, since Nicholas and Sato are both from the same field of endeavor, the purpose disclosed by Sato would have been recognized in the pertinent art of Nicholas.

b) channel comprising crystalline silicon.

However, Yamazaki et al. ("Yamazaki") discloses a channel comprising crystalline silicon (For Example: See Column 5 Lines 50-53). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include a channel comprising crystalline silicon as disclosed in Yamazaki because it aids in providing a TFT with high field mobility (For Example: See Column 3 Lines 65-67).

Additionally, since Nicholas and Yamazaki are both from the same field of endeavor, the purpose disclosed by Yamazaki would have been recognized in the pertinent art of Nicholas.

In regards to claim 56, Nicholas discloses the following:

- a) a pair of substrates opposing each other (22 and 24) (For Example: See Figure 2);
- b) a thin film transistor formed between the pair of substrates with a resinous layer (31) interposed therebetween (For Example: See Column 6 Lines 14-24);
- c) a layer (37) comprising resin covering the thin film transistor (For Example: See Figure 2); and
- d) the thin film transistor has a channel forming region (For Example: See Column 6 Lines 14-24).

In regards to claim 56, Nicholas fails to disclose the following:

- a) flexible substrates wherein the device is flexible.

However, Sato discloses flexible substrates wherein the device is flexible (For Example: See Column 7 Lines 27-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include flexible

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substrates as disclosed in Sato because it aids in providing a flexible panel (For Example: See Column 7 Lines 27-33).

Additionally, since Nicholas and Sato are both from the same field of endeavor, the purpose disclosed by Sato would have been recognized in the pertinent art of Nicholas.

b) channel comprising crystalline silicon formed by laser irradiation.

However, Yamazaki discloses a channel comprising crystalline silicon (For Example: See Column 5 Lines 50-53). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include a channel comprising crystalline silicon as disclosed in Yamazaki because it aids in providing a TFT with high field mobility (For Example: See Column 3 Lines 65-67).

Additionally, since Nicholas and Yamazaki are both from the same field of endeavor, the purpose disclosed by Yamazaki would have been recognized in the pertinent art of Nicholas.

Finally, the following limitation makes it a product by process claim: a) "formed by laser irradiation." The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA



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1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 61, Nicholas fails to disclose the following:

a) silicon is amorphous silicon.

However, Yamazaki discloses amorphous silicon (For Example: See Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include amorphous silicon as disclosed in Yamazaki because it aids in providing a TFT with high field mobility (For Example: See Column 3 Lines 65-67).

Additionally, since Nicholas and Yamazaki are both from the same field of endeavor, the purpose disclosed by Yamazaki would have been recognized in the pertinent art of Nicholas.

In regards to claim 66, Nicholas fails to disclose the following:

a) flexible substrate comprises a plastic substrate.

However, Sato discloses a plastic substrate (For Example: See Column 7 Lines 27-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include a plastic substrate as disclosed in Sato because it aids in providing a flexible panel (For Example: See Column 7 Lines 27-33).

Additionally, since Nicholas and Sato are both from the same field of endeavor, the purpose disclosed by Sato would have been recognized in the pertinent art of Nicholas.

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In regards to claim 70, Nicholas discloses the following:

a) the thin film transistor comprises an inverted staggered thin film transistor (For Example: See Figure 2).

In regards to claim 71, Nicholas discloses the following:

a) the thin film transistor comprises a coplanar thin film transistor (For Example: See Figure 2).

10. Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nicholas (U.S. Patent No. 5,132,821) in view of Sato (U.S. Patent No. 5,268,777) and Takahashi et al. (U.S. Patent No. 5,712,496).

In regards to claim 62, Nicholas fails to disclose the following:

a) silicon is microcrystalline silicon.

However, Takahashi et al. ("Takahashi") discloses microcrystalline silicon (For Example: See Column 6 Lines 5-9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include microcrystalline silicon as disclosed in Takahashi because it aids in providing a high current driving performance (For Example: See Column 4 Lines 25-28).

Additionally, since Nicholas and Takahashi are both from the same field of endeavor, the purpose disclosed by Takahashi would have been recognized in the pertinent art of Nicholas.

11. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nicholas (U.S. Patent No. 5,132,821) in view of Sato (U.S. Patent No. 5,268,777) and Nakayama et al. (U.S. Patent No. 5,231,297).

In regards to claim 63, Nicholas fails to disclose the following:

a) laser light comprises at least one selected from the group selected from the group consisting of KrF excimer laser light and XeCl laser light.

However, Nakayama et al. ("Nakayama") discloses a laser light selected from the group consisting of KrF excimer laser light and XeCl laser light (For Example: See Column 3 Lines 62 and 63). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include a laser light that selected from the group consisting of KrF excimer laser light and XeCl laser light as disclosed in Nakayama because it aids in providing high energy (For Example: See Column 3 Lines 62-64).

Additionally, since Nicholas and Nakayama are both from the same field of endeavor, the purpose disclosed by Nakayama would have been recognized in the pertinent art of Nicholas.

12. Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nicholas (U.S. Patent No. 5,132,821) in view of Sato (U.S. Patent No. 5,268,777) and Tsunohashi et al. (Japanese Patent No. 362093974).

In regards to claim 67, Nicholas fails to disclose the following:

a) the flexible substrate comprises at least one selected from the group consisting of PET (polyethylene terephthalate), PEN (polyethylene naphthalate), PES (polyethylene sulfite) and polyimide.

However, Tsunohashi et al. ("Tsunohashi") discloses a flexible substrate that comprises at least one selected from the group consisting of PET (polyethylene terephthalate), PEN (polyethylene naphthalate), PES (polyethylene sulfite) and polyimide (For Example: See Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include a flexible substrate that comprises at least one selected from the group consisting of PET (polyethylene terephthalate),

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PEN (polyethylene naphthalate), PES (polyethylene sulfite) and polyimide as disclosed in Tsunohashi because it aids in providing a large area display (For Example: See Abstract).

Additionally, since Nicholas and Tsunohashi are both from the same field of endeavor, the purpose disclosed by Tsunohashi would have been recognized in the pertinent art of Nicholas.

13. Claim 68 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nicholas (U.S. Patent No. 5,132,821) in view of Sato (U.S. Patent No. 5,268,777) and Kitahara et al. (U.S. Patent No. 4,636,038).

In regards to claim 68, Nicholas fails to disclose the following:

a) resinous layer comprises acrylic resin.

However, Kitahara et al. ("Kitahara") discloses acrylic resin (For Example: See Column 1 Lines 52-68). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include acrylic resin as disclosed in Kitahara because it aids in preventing cracks (For Example: See Column 1 Lines 52-68).

Additionally, since Nicholas and Kitahara are both from the same field of endeavor, the purpose disclosed by Kitahara would have been recognized in the pertinent art of Nicholas.

14. Claim 68 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nicholas (U.S. Patent No. 5,132,821) in view of Sato (U.S. Patent No. 5,268,777), Yamazaki et al. (U.S. Patent No. 5,894,151) and Kitahara et al. (U.S. Patent No. 4,636,038).

In regards to claim 68, Nicholas fails to disclose the following:

a) resinous layer comprises acrylic resin.

However, Kitahara discloses acrylic resin (For Example: See Column 1 Lines 52-68). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include acrylic resin as disclosed in Kitahara because it aids in preventing cracks (For Example: See Column 1 Lines 52-68).

Additionally, since Nicholas and Kitahara are both from the same field of endeavor, the purpose disclosed by Kitahara would have been recognized in the pertinent art of Nicholas.

15. Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nicholas (U.S. Patent No. 5,132,821) in view of Sato (U.S. Patent No. 5,268,777) and Takenouchi et al. (U.S. Patent No. 5,427,961).

In regards to claim 69, Nicholas fails to disclose the following:

a) the resinous layer comprises at least one selected from the group consisting of methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid.

However, Takenouchi et al. ("Takenouchi") discloses a resinous layer that comprises at least one selected from the group consisting of methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid (For Example: See Column 3 Lines 55-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include a resinous layer that comprises at least one selected from the group consisting of methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid as disclosed in Takenouchi because it aids in preventing wear (For Example: See Column 4 Lines 47-50).

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Additionally, since Nicholas and Takenouchi are both from the same field of endeavor, the purpose disclosed by Takenouchi would have been recognized in the pertinent art of Nicholas.

16. Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nicholas (U.S. Patent No. 5,132,821) in view of Sato (U.S. Patent No. 5,268,777), Yamazaki et al. (U.S. Patent No. 5,894,151) and Takenouchi et al. (U.S. Patent No. 5,427,961).

In regards to claim 69, Nicholas fails to disclose the following:

a) the resinous layer comprises at least one selected from the group consisting of methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid.

However, Takenouchi discloses a resinous layer that comprises at least one selected from the group consisting of methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid (For Example: See Column 3 Lines 55-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Nicholas to include a resinous layer that comprises at least one selected from the group consisting of methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid as disclosed in Takenouchi because it aids in preventing wear (For Example: See Column 4 Lines 47-50).

Additionally, since Nicholas and Takenouchi are both from the same field of endeavor, the purpose disclosed by Takenouchi would have been recognized in the pertinent art of Nicholas.

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***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300 for regular and after final communications.

ML

January 17, 2007

A handwritten signature in black ink, appearing to be 'ML', located in the lower right quadrant of the page.